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TECHNOLOGICAL FEATURES OF THE ARRANGEMENT AND INSTALLATION OF FOLDED-PLATE SHELL FOUNDATIONS

Foundation is one of the most important elements in the design, erection and operation of any structure or building. Foundations are to be of necessary strength and fracture toughness under considerable loads. The base on which this foundation is laid also plays an important role. Various shell foundations are differentiated among the foundations types. In structures with thin shell foundation strength of concrete and reinforced is operated greatly. Particular attention should be paid to the technological features of folded-plate shell foundations arrangement, because they require specific measures of base preparation, specific installation methods of individual structural elements of the foundation and commissioning of these structures.

Particular attention should be paid to the arrangement technology of folded-plate shell foundations on water-saturated soils, peat and marshy areas, since these areas are often used for laying power lines. Application of umbrella-like foundations or pile foundations on such soils for power transmission towers are not always appropriate as there are some difficulties in preparing bases for foundations; during delivery and placement of large equipment for pile driving; it is necessary to take measures for the drainage of a significant amount of ground water from a construction site. Usually design of shell foundations is performed in prefabricated or precast-monolithic versions. Such foundation were widely used for power transmission towers construction in different geological conditions, for example on bogs of the Ural. Folded-plae foundation comprised six separate folds of precast reinforced concrete which had diaphragms. Beams and girders were arranged along folds to which the building was attached. All building and assembly works were conducted according to the developed methods before bog thawing. Precast units were hoisted by crane on frozen surface of bog, after that steel or concrete beams or

girders were installed on them and fastened them to the folds with the galvanized bolts. Then the tower structures were installed. Therefore earthworks were completely excluded. During the thawing of bogs, foundation settled but this processes stabilized gradually. Each of the folds was provided with special check valves, which inlet water and air under primary settling of foundation, but allowed to create the effect of "osculum" during the separation of foundation from the soil. Facilitated construction of such foundations can be delivered in off-road condition by helicopters and installed directly on the surface of bog. Therefore there is no need for special mechanisms of soil extraction or pile driving which require road transportation. This provides cheaper and faster construction solutions to bog soil areas. Existing versions of the folded-plate shell foundation technology are based on traditional methods of foundations installation. Thus, extra costs on reorganization of production process applying such foundations are not required.

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EFFECTIVE DESIGN – FOLDED-PLATE SHELL FOUNDATION

At the present stage of foundation engineering there is a need to develop advanced constructions of foundations, which will be more